SKIES BASIC NETWORK TECHNOLOGY STANDARDS

The purpose of this document is to provide a basic understanding of the SKIES infrastructure, and its dependencies and requirements. There are two basic SKIES components; the network infrastructure and the SKIES application. This document addresses the many network infrastructure components that influence connectivity and performance of the SKIES application.

The basic components addressed here are: (1) the desktop computer; (2) the Local Area Network (LAN); (3) the Wide area Network (WAN); and (4) connectivity between each of them.

Configuration, installation, and general best practice methodology for hardware and software at each of these layers will also be addressed. Our hope is that this information will assist SKIES users, partners, and technical staff as they review and evaluate their network systems for implementation.

Testing has determined that SKIES will function as robustly as the local supporting infrastructure permits. Regardless of the speed at which the information is transmitted from the SKIES servers, the user's performance will be directly correlated to the performance of the local network infrastructure. This simply means that performance can be at either end of the scale, depending on local resource availability.

GETTING CONNECTED – is simply a matter of having Internet or Intranet connectivity, the SKIES URL (address), and a properly configured computer. SKIES is not an open system, authorized user accounts and passwords are required for access.

		Methods of Accessing the ESD SKIES Application	
		Access via the State Government Network (SGN)	Access via the Internet
SKIES Environments	Production	http://go2skies.esd.wa.gov	http://www.wa.gov/esd/go2skies
	Training	http://skies.esd.wa.gov	http://www.wa.gov/esd/skiestraining

Note: If you are able to access the Inside ESD web site http://insideesd.esd.wa.gov, you are on the State Government Network. Otherwise, you will be accessing SKIES via the Internet.

INTERNET USER NOTE – Testing has verified that when SKIES users access the application from the Internet there are random occurrences of individuals losing connectivity with the application. This problem has been confirmed, and identified as an incompatibility between Microsoft's Windows 9x WinSock and Oracle's J-Initiator. The matrix below displays which Java plug-in should be used under which circumstance. Please note that this only applies to SKIES users accessing the application via the Internet (typically WIA contractors and ESD staff who are co-located in Community Colleges). A permanent fix for this problem should be available with the next release of Oracle's J-Initiator; Oracle is currently beta-testing the new release.

Matrix of Operating System vs. Java Requirements			
Operating System	**Microsoft (Java) Virtual Machine**	**Oracle J-Initiator**	**Notes**
Windows 95	X		Requires latest version of Microsoft Virtual Machine
Windows 98	X		
Windows 98 SE	X		
Windows ME	X		
Windows NT 4.x		X	Requires Oracle J-Initiator
Windows 2000		X	
Windows XP		X (1)	
Windows Vista		X	
Windows 7		X	

DESKTOP COMPUTERS – Software installation and configuration at the desktop can play a significant role in application performance. An improperly configured desktop computer can prevent connectivity to SKIES, and/or cause adverse performance issues. However, understand that there are as many possible configurations as there are computers and networks in our WorkSource system.

The minimum requirements for a desktop computer to run the SKIES application are the same as the ESD's minimum staff desktop computer configuration. We understand that some partners may have computers that do not meet ESD hardware standards. Testing has proven that the SKIES application will run on a 300 MHz PC with 128MB of RAM, however, performance will not be as robust as on faster computers.

System Requirements		
	Minimum	**Recommended**
Hardware		
CPU	2 – 300 MHz	3 – 550 MHz or better
RAM	128 MB	128 MB or better
Disk Storage Available	250 MB	500 MB or more
Software		
Operating Systems	Windows 95, 98, 98SE, 2000, ME, NT 4.x, XP, Vista, Windows 7 (latest service packs applied)	Windows XP, Vista, Windows 7 (latest service packs applied)
Internet Browser	MS Internet Explorer 5.5 SP2	MS Internet Explorer 5.5 to 8
Acrobat Reader	Acrobat Reader 4.0 or better	Acrobat Reader 4.0 or better
Java Plug-In	MS Virtual Machine	Oracle J-Initiator

These Hardware and software component combinations have been extensively tested by the SKIES technical team. While exact performance may vary from site-to-site depending on a long list of variables, overall pre-production testing proved acceptable performance across the State Government Network (SGN) and the Internet. The configuration defined here is the minimum for SKIES application use; more demanding users may require faster computers with more resources. If you experience slow

performance or dropped connectivity please contact the SKIES Help Desk. Current ESD PC purchase standards can be found at http://www.wa.gov/esd/skies/pc_standards.doc

LOCAL AREA NETWORK (LAN) – The Local Area Network is the primarily means to connect to the SKIES application. No special LAN configurations are required. However, if there are existing latency and performance issues with the LAN, those characteristics will be mirrored in SKIES performance and connectivity. Typical LAN components that effect network performance are local hubs/switches, building wiring, proxies, firewalls and computer network interface cards. The use of low-end network equipment or overloading existing switches can also cause severe latency. ESD's standard network operating system is Windows 2000 on all domain controller servers. Whether your network is Windows 2000 or NT 4, always apply the latest service pack. It is recommended that all LAN's use a minimum of Category 5 certified wiring and where possible use 100Mbps switches and network interface cards. As a web application, SKIES uses minimal local area network resources. For partners and staff access to SKIES via the Internet, your web performance should be fairly comparable to other secure web transactions services.

WIDE AREA NETWORK (WAN) – We are limited by Service Level Agreements with partners and the Department of Information Services (DIS) for security and connectivity reasons as to what we can and cannot do. WAN issues apply primarily to WDC's, WDA's and sites connected directly to the SGN. During SKIES performance testing, all ESD WAN circuits connecting to the DIS backbone (SGN) were evaluated and many were upgraded in order to provide adequate bandwidth and performance. These upgrades were completed based on total networked devices at each site. Post upgrade testing has verified that current bandwidth is adequate to provide the required SKIES performance. A simple matrix (see below) was developed to determine bandwidth requirements for all ESD sites connected to the SGN. This matrix proved to be accurate in sizing bandwidth to accommodate SKIES and existing WAN connectivity demands.

WAN Bandwidth Recommendations	
Number of Networked Devices	**Bandwidth Recommendation**
1 – 25 (*)	T-1 Access Circuit, 512K CIR
26 – 50	T-1 Access Circuit, 768K CIR
51 and above	Full T-1, point to point

(*) Sites with up to 10 staff may be individually evaluated to determine best method for providing site connectivity.

NOTE – Some partner sites were also evaluated during pre-production testing. Common issues with partner site connectivity typically dealt with lack of meeting minimum PC, LAN, or WAN bandwidth requirements. Other connectivity issues were a direct result of over-subscribing SOHO (Small Office/Home Office) equipment. Typically, SOHO devices such as routers and DSL/Cable modems are not capable of supporting enterprise class applications. Individual sites must ensure that they have adequate hardware to support a production environment.